

ORIGINAL

DOCKET FILE COPY ORIGINAL
Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)

Advanced Television Systems)
and Their Impact upon the)
Existing Television Broadcast)
Service)

MM Docket No. 87-268

RECEIVED

DEC 17 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

To: The Commission

COSMOS RESPONSE TO EX PARTE FILINGS
ADDRESSING DIGITAL TV ALLOTMENTS

Cosmos Broadcasting Corporation ("Cosmos"), licensee of eight television stations located throughout the eastern United States, by its attorneys, hereby responds to the Commission's request for comments on recent *ex parte* filings by the Association for Maximum Service Broadcasters, Inc. ("MSTV") and the Association of Local Television Stations, Inc. ("ALTV") relating to the above-referenced proceeding.^{1/}

I. THE COMMISSION MUST ADDRESS THE DTV-TO-DTV ADJACENT CHANNEL PROBLEM.

MSTV addresses in its submission, *inter alia*, the recently identified interference problem with DTV-to-DTV adjacent channels. MSTV calculates that the DTV Table of Allotments released prior to the discovery of the adjacent channel interference problem contains about 250 adjacent DTV channel assignments that, based upon present analysis, "significantly reduce the

^{1/} FCC Public Notice, *FCC Seeks Comment on Filings Addressing Digital TV Allotments* (rel. Dec. 2, 1997).

No. of Copies rec'd
List ABCDE

029

DTV service areas.”^{2/} MSTV describes this allotment problem as “systemic” and urges the Commission “to act expeditiously to correct” the DTV-to-DTV interference problem.^{3/}

Cosmos has reviewed the comments, petitions and other documents identified by MSTV describing the DTV-to-DTV interference problem and has concluded action by the Commission is warranted. Accordingly, Cosmos supports the MSTV filing to the extent that the Commission review the affected allotments and act to resolve the problem in a reasonable manner. While it is certainly critical that the DTV roll-out proceed as rapidly as possible, the Commission should not forfeit its opportunity to resolve identified interference problems *ex ante* before actual stations and actual viewers must contend with DTV interference. It is essential that the Commission confront this issue before it actually occurs rather than after the fact.

II. BROADCASTERS IN INDIVIDUAL MARKETS MUST BE PERMITTED TO STUDY SPECIFIC PROBLEMS AND RECOMMEND SOLUTIONS.

Cosmos generally supports MSTV’s effort to develop spot solutions to the DTV Table in congested areas. Cosmos agrees with the approach taken by MSTV, contrasted to proposing a completely new DTV Table that would require new rounds of analysis and comment and further delay to the DTV roll-out. Cosmos cannot, however, offer its blanket endorsement of MSTV’s proposed allotments. There has not been sufficient time to analyze properly the allotments and their effect on surrounding stations. Accordingly, whether it is the existing DTV Table or MSTV’s proposed modifications, broadcasters must have an opportunity to study specific problems and recommend solutions on a case-by-case basis.

^{2/} MSTV Ex Parte Submission at 7.

^{3/} *Id.* at 10-11.

Cosmos concurs with MSTV's apparent conclusion that the assignment of Channel 11 to WBNS, Columbus, OH in the DTV Table of Allotments must be modified.^{4/} As demonstrated throughout this proceeding, Cosmos station WTOL-TV, Toledo, OH will receive significant adjacent-channel interference inside the Toledo DMA from the proposed DTV allotment to WBNS.^{5/} Though the DTV Table indicated that only 1.4% of WTOL-TV's service population would experience new interference, Cosmos's own analysis revealed that 5.5% of the population *inside the Toledo DMA* would lose service, a level Cosmos considers unacceptable.^{6/} *See Coverage Map for WTOL-TV* (Exhibit A attached hereto). Cosmos agreed with Dispatch Broadcast Group, parent company of the licensee of WBNS, in its petition to reassign WBNS-DT and supported that petition in this docket.^{7/} With all of these parties in apparent agreement that WBNS-DT should be reassigned, Cosmos urges that the Commission, consistent with the case-by-case approach supported here, re-examine this DTV assignment.

WTOL-TV's NTSC operations on Channel 11 should not be discounted. While the Commission and the broadcast industry are committed to a rapid DTV roll-out, circumstances such as the DTV-to-DTV adjacent channel interference problem, and Congress's recent benchmarking of the DTV transition to market penetration, indicate that the DTV transition may

^{4/} MSTV proposes to reassign WBNS-DT, Columbus, OH, to Channel 32.

^{5/} *See* Petition for Partial Reconsideration submitted by Cosmos Broadcasting Corporation, submitted June 13, 1997; Supplement to Petition for Reconsideration submitted by Cosmos Broadcasting Corporation, submitted Aug. 22, 1997.

^{6/} Supplement to Petition for Reconsideration submitted by Cosmos Broadcasting Corporation, submitted Aug. 22, 1997.

^{7/} Comments in Support of Dispatch Supplement to Petition for Reconsideration submitted by Cosmos Broadcasting Corporation, submitted Sept. 23, 1997.

not be as quick and smooth as hoped. Viewers may very well rely on NTSC broadcasts for some time. If this is the case, there will be significant viewer and political outcry that will result from DTV interference to NTSC signals. Viewers likely will rebel if they are forced to upgrade to a new technology before they can afford or wish to do so. Furthermore, it is no solution to ask viewers to "upgrade" their television and then require them to construct a tower antenna to receive their channels. Viewers will resist these efforts as well, resulting in general dissatisfaction and decreased local viewership.

The Commission has established a well-balanced framework for adjustments to the DTV Table. Cosmos supports this framework and is prepared to cooperate with other broadcasters in resolving problems on a case-by-case basis. Broadcasters are best situated and have the highest incentive to reach solutions. Accordingly, broadcasters must be permitted — as the Commission contemplated — to study and propose individual solutions to the DTV Table, as opposed to any effort to promote some set of package changes.

III. COSMOS AGREES WITH MSTV THAT A *DE MINIMIS* STANDARD OF PERMISSIBLE INTERFERENCE MUST BE ADOPTED.

MSTV states that "it is becoming increasingly clear that it will be necessary to have a de minimis standard of permissible interference rather than the 'no new interference' standard."^{8/} As stated in its earlier filing,^{9/} Cosmos agrees. During this transition period when the spectrum is

^{8/} MSTV Ex Parte Submission at 10.

^{9/} Consolidated Reply of Cosmos Broadcasting to Supplement Oppositions, submitted Oct. 3, 1997, at 5-8. As noted there, the *Fifth* and *Sixth Reports and Orders* do not compel a "no new interference" standard for the reconsideration phase of the DTV Table.

fully congested, stations making meritorious showings through sufficient technical and related support should be allowed to tolerate/create a *de minimis* level of interference.

Past *de minimis* standards are inappropriate in this new saturated paradigm. Instead, as the Commission has said, the goal should be spectrum efficiency.^{10/} Cosmos proposes that the *de minimis* standard be based upon population instead of service area. As an example, interference caused over non-populated areas (such as swamps or wilderness), or over areas where other stations have no viewers, should be exempted. The Commission could view a *de minimis* standard in three distinct phases. Prior to final approval of the DTV Table, a *de minimis* standard set at a level approximating the average predicted new interference as established in the current DTV Table would be applied in the reconsideration phase. In the second phase — between the close of reconsideration of the DTV Table and the time of the return of the second channel — a lower *de minimis* standard would be applied. After the transition, the *de minimis* standard could be reduced to its traditional levels. The Commission may find other manners of stratification to be useful: Grade B contours could have one *de minimis* level and DMA's another.

Cosmos believes that establishing a *de minimis* standard — whereby licensees would submit clear, well-supported showings concerning their allotments — will reduce administrative burden by decreasing the overall number of complaints and problems resulting from new interference and distilling matters for the Commission's determination. Cosmos is prepared to

^{10/} See, e.g., *Advanced Television Systems and Their Impact Upon the Existing Television Broadcast Service*, Fifth Report and Order, MM Docket No. 87-268, 7 CR 863, 866-67 (P&F) (April 22, 1997).

work with the industry to develop processes that would reduce the burden on a Commission already facing substantial workloads in the DTV transition.

IV. BEAM TILT ANTENNAS WILL RESULT IN LOSS OF SERVICE TO VIEWERS.

ALTV proposes in its *ex parte* letter, *inter alia*, to permit stations to employ beam tilt antennas and thus allow for increased power.^{11/} ALTV contends that this would rectify some of the egregious consequences of the DTV power disparity between VHF and UHF stations. ALTV asserts that beam tilt antennas would "not result in any increased interference" above that of any other DTV plan. Cosmos opposes ALTV's beam tilt proposal because of the interference it would create to viewers.

As demonstrated in the attached technical exhibit, antenna towers are dynamic structures subject to deflection due to wind loading that can reach as high as 1.3 percent of the tower height. *See Technical Statement of du Treil, Lundin & Rackley, Inc.* (Exhibit B attached hereto). Towers are designed to accommodate these deflections. The combination of tower deflection, high gain antennas (as likely required by the DTV stations) and beam tilting, however, would have significant effect on power radiated toward the radio horizon. Under wind loading causing a 0.7° shift in the beam tilt, the ERP at the radio horizon would increase by 11 dB. The result for viewers: interference to their regularly received television signals. The example provided in Exhibit B illustrates the significance of the problem. Using typical parameters, the population in the example experiencing new interference would nearly double if tilt beam techniques were

^{11/} ALTV at 1.

employed (under maximum deflection). Such an increase in new interference cannot be disregarded.

An additional problem with beam tilt is the increase in blanket area, that region around the transmitter in which the reception of other stations is subject to interference (due to the strong signal from the station).^{12/} Use of beam-tilt would increase the blanket area and simply locate a station's interference problem from the outer to the inner service regions.

Beam tilt is not a new technique. It has been beneficial in some cases, but it is not intended to be a universal tool. Adopting general rules permitting beam tilt operation *en masse* is not a solution. In many instances, beam tilt would create more problems than it would solve. Because the ALTV beam tilt proposal would result in a loss of service to other stations, Cosmos asks the Commission to reject the use of beam tilting except where it is demonstrated, on a case-by-case basis, that maximum deflection conditions would not create interference to neighboring stations.

V. THE PROCEDURES PROPOSED BY ALTV ARE NOT VIABLE.

ALTV proposes a set of procedures designed to facilitate the resolution of interference disputes that might result from increases in a station's DTV power and to otherwise promote the ability for stations to increase ERP. While Cosmos appreciates the attempt of ALTV both to craft a resolution to stations' power problems and reduce the Commission's burden in this matter, ALTV's approach is flawed.

^{12/} 47 C.F.R. § 73.685(d).

First, the proposed procedures place the burden on the station receiving interference to act to remedy an interference problem. This burden shifting is contrary to years of Commission policy regarding interference. The appropriate burden is placed upon the party wishing to act and not upon the party who would suffer interference due to the actions of another. ALTV's approach would give incentive to stations to increase power and wait to see if anyone complains. The inevitable result would be increased interference, increased complaints and increased monitoring costs.

Second, ALTV's use of nebulous "parameters" such as "incremental visible interference" and "digital noise floor" render the procedures unworkable (*See Technical Statement of du Treil, Lundin & Rackley, Inc.*). The Commission and broadcasters must be able to rely upon clearly defined, well-understood, quantifiable parameters. Visual observations, *e.g.*, require large numbers of samples over lengthy periods to acquire a reliable level of precision and so is not feasible in an environment of accelerated service roll-out. Certainly stations may agree among themselves to resolve potential disputes in the manner formulated by ALTV, and Cosmos sees the merit in this approach, but requiring broadcasters to adhere to the proposed procedures could lead to an increase in the number of disputes without increasing the number of resolutions. Absent the necessary detail regarding the proposed procedures, Cosmos cannot endorse ALTV's efforts.

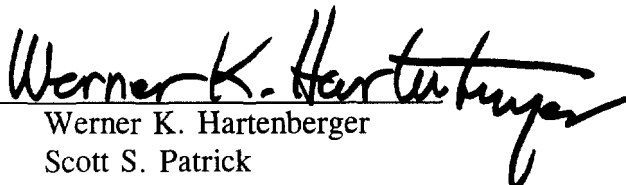
VI. Conclusion

Cosmos appreciates the efforts of groups like ALTV to resolve various DTV obstacles. Through industry cooperation and negotiation and the Commission's steady guidance, DTV will be welcomed by viewers. Cosmos supports MSTV's on-going work with Viacom and other

UHF oriented groups to solve the power disparity issue. However, Cosmos believes that the Commission should give more weight to actual results and experimental testing than to theoretical proposals. Accordingly, a case-by-case approach to resolving problems inside the framework established by the Commission would best suit the public interest.

Respectfully submitted,

COSMOS BROADCASTING CORPORATION

By: 
Werner K. Hartenberger
Scott S. Patrick

Its Attorneys

Dow, Lohnes & Albertson, PLLC
1200 New Hampshire Avenue, N.W.
Suite 800
Washington, D.C. 20036-6802
202-776-2000

December 17, 1997

EXHIBIT A

Coverage Map for WTOL-TV

Charlotte

Mason

Ingham

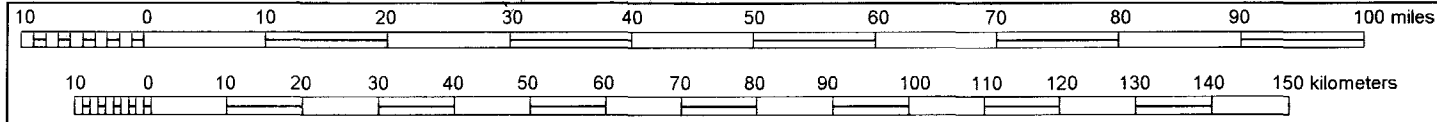
WTOL-TV Toledo, Ohio
Existing NTSC Facility
CH 11 316 kW 305 M

Grade B

Jackson

Albion

Jackson



PREDICTED AREAS OF INTERFERENCE TO WTOL-TV TOLEDO

PREPARED FOR
COSMOS BROADCASTING CORPORATION

du Treil, Lundin & Rackley, Inc., Sarasota, Florida

Washtenaw

Livonia

Canton

Dearborn Heights

Wayne

Ann Arbor

Romulus

South River

Saline

Flat Rock

Tecumseh

Monroe

Monroe

Lake
Erie

Adrian

Lenawee

Lambertville

Sylvania

Toledo

Oregon

Northwood

Lucas

Maumee

Ottawa

Port Clinton

Sandusky

Avon Lake

Lorain

Westlake

Fulton

Wauseon

Henry

Bowling Green

Sandusky

Fremont

Clyde

Bellevue

Erie

Norwalk

Lorain

Stro

Defiance

Defiance

Wood

Seneca

Fostoria

Tiffin

Hancock

Huron

Paulding

Putnam

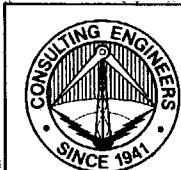
Shelby

Ashland

Richland



Interference from proposed WBNS(TV),
Columbus, Ohio DTV Channel 11



DECEMBER 1997

EXHIBIT B

Technical Statement of du Treil, Lundin & Rackley, Inc.

TECHNICAL EXHIBIT
COSMOS BROADCASTING CORPORATION
DTV BEAM TILT PROPOSAL

Technical Statement

This technical exhibit was prepared on behalf of Cosmos Broadcasting Corporation (herein "Cosmos"), licensee of several full-service television stations. Cosmos is responding to the Association of Local Television Stations (ALTV) proposal to increase the effective radiated power of all DTV television stations to 1,000 kilowatts without increasing the coverage area beyond their present respective noise-limited contour. The suggested mechanism to provide such an increase in effective radiated power is to employ beam tilt of the transmitting antenna. This could theoretically limit the field strengths at the original noise-limited contour value but increase the field strengths within the contour. This is achieved by tilting the main beam of the DTV transmitting antenna vertical plane within the noise-limited contour area rather than toward the radio horizon as is typical for full-service television stations.

Cosmos is concerned about the use of excessive transmitting antenna beam tilt to achieve an effective radiated power of 1,000 kilowatts while restricting power toward the radio horizon. Principally, Cosmos does not believe that a specific beam tilt can be maintained due to the dynamic characteristic of towers. With such effects as

wind loading on transmitting antenna towers, tower deflections occur which will cause deviations in the antenna beam tilt. This shift in the antenna beam tilt will alter the power radiated toward the radio horizon. If the effective radiated power is increased by beam tilt shift, interference to other stations may occur, thus resulting in loss of service. It is also important to note that increases in beam tilt required by the ALTV proposal are typically beyond the values traditionally used by today's NTSC stations.

According to a representative from Kline Towers, a manufacturer and erector of tall towers, maximum tower deflections occur up to 1.3 percent of the tower height at maximum design wind loading. A memo from Kline Towers establishing this tower deflection value is shown on Figure 1. The memo further states that if a tower with an overall height of 2,000 feet above ground level is subjected to maximum wind loading, the top of the tower is expected to deflect up to 25 feet. Further calculations by the undersigned reveal that this will cause a shift in the beam tilt of up to 0.7° from the established value. It is noted that the beam tilt caused by tower deflections is independent of tower height.

To determine the change in effective radiated power caused by beam tilt shift from tower deflections, a review is necessary of the vertical plane pattern of a high gain antenna as shown on Figure 2. A high gain antenna, such as the Dielectric 42J3600 noted on Figure 2, would most likely be employed by a DTV station to achieve an effective radiated power of 1,000 kilowatts with 50 kilowatts radiated toward the radio horizon. Assuming that the main beam of the vertical pattern has an effective radiated power of

1,000 kilowatts (Point A), the antenna would have to be tilted 1.3° (Point B) to radiate 50 kilowatts toward the radio horizon. If tower deflections cause a 0.7° shift in the beam tilt, then the power radiated toward the radio horizon either increases to 625 kilowatts (Point C) or decreases to 38 kilowatts (Point D). This 11-decibel increase in effective radiated power at the radio horizon caused by the 0.7° beam tilt shift could cause new or increased interference to other broadcast stations.

A shift in the transmitting antenna beam tilt will also cause a change in the power radiated toward the radio horizon for a low gain transmitting antenna. Figure 3 is similar vertical plane pattern for a Dielectric 24J2250 antenna. Such an antenna may be employed to achieve an effective radiated power of 250 kilowatts within the noise-limited contour with 50 kilowatts radiated toward the radio horizon. A 0.7° beam tilt shift will cause the power radiated toward the radio horizon to increase to 150 kilowatts or decrease to 0.8 kilowatt. If the power is increased at the radio horizon, new or increased interference could occur to other stations, but not to the extent as the aforementioned high gain antenna.

Substantial interference can also occur if the tower deflection is only one-half of the 1.3 percent maximum winding loading or 0.35° beam tilt. As can be derived from the antenna vertical patterns shown in Figures 2 and 3, 0.35° of additional tilt could cause a 7 decibel increase in effective radiated power toward the radio horizon for the high gain antenna (Figure 2) and 2.5 decibel increase for the low gain antenna (Figure 3).

To illustrate the interference increase which may occur with tower deflections, an interference study to an existing NTSC station was calculated pursuant to OET Bulletin 69. According to both the FCC's and proposed MSTV's DTV allotment table, television station WETA-TV at Washington, DC is assigned DTV channel 27. This DTV facility is predicted to cause interference to the existing WHTM-TV on NTSC Channel 27 at Harrisburg, Pennsylvania over an area of 506 km² encompassing a population of 39,060 persons as shown on Figure 4. Figure 5 shows the predicted interference to WHTM-TV if WETA-TV is assumed to be operating at 1,000 kilowatts using the ALTV's beam tilt concept with maximum tower deflection (0.7° of additional beam tilt). It is assumed that the WETA-TV tower is deflecting in such a way as to increase the effective radiated power toward the radio horizon using the transmitting antenna specified in Figure 2. The predicted interference to WHTM-TV from this assumed WETA-TV facility will increase to an area of 1,045 km² with a population of 72,225 persons. This is an increase in interference to WHTM-TV of 206 percent in the area and 184 percent of the population.

If WETA-TV is assumed to operate at a an effective radiated power of 250 kilowatts employing the antenna described in Figure 3, additional interference caused by maximum tower deflections will also continue to occur to WHTM-TV. Calculations indicate that the interference area will increase to 732 km² containing a population of 52,210 persons. This is an increase in interference to WHTM-TV of 145 of the area and 133 percent of the population.

The increase in the effective radiated power to 1,000 kilowatts to all DTV stations will also increase the

blanket area. A blanket area, according to Section 73.685(d) of the Commission's Rules, is that area adjacent to a transmitter in which the reception of other stations is subject to interference due to the strong signal from this station. The size of the area is related to the effective radiated power of the station. Therefore, with all stations operating at higher power levels, the problems associated with blanket interference will also increase.

Use of Measurements to Establish Interference

Cosmos has further concerns regarding the determination of new or additional interference caused by increases in the effective radiated power by the use of beam tilt. As the field strengths at the noise-limited contour theoretically are not increased by the use of beam tilt, interference within the noise-limited contour can still be caused to other television stations. ALTV proposes to resolve these interference issues by determining if "incremental visible interference occurs."¹ ALTV is further concerned with the raising of the "total digital noise floor" in a television market. However, no explanation is provided as to why the digital noise floor would be increased. Therefore, Cosmos lacks the necessary information to comment on this noise floor concept.²

¹ ALTV defines incremental visible interference as the level of interference above and beyond that which would have existed had the station been operating at the assigned effective power contained in the FCC's final Report and Order.

² It is assumed that the frequency "splatter" products occurring throughout the UHF band from all the high power DTV stations would increase the total noise floor.

According to ALTV, any incremental visible interference would be established by measurements. As the Commission realizes, in order for measurements to have statistical relevance, extensive measurements have to be taken. Furthermore, the analysis of such measurements is subjective, thus permitting the possibility of different conclusions. Therefore, the use of measurements in the determination of "incremental visible interference" would be an impractical process.

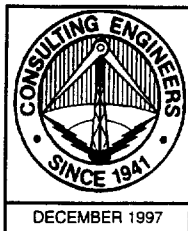
It can be concluded that tower deflections will cause a shift in the beam tilt of the DTV transmitting antenna. This shift, independent of the overall tower height, may cause an increase in effective radiated power at the radio horizon and consequently cause new or increased interference to other broadcast stations. Additionally, the use of field strength measurements to establish any new interference which may result by the use of beam tilt is impractical. Therefore, Cosmos does not believe that a specific beam tilt can be maintained and therefore the ALTV proposal will result in loss of service to other stations.



Charles A. Cooper

December 5, 1997

du Treil, Lundin & Rackley, Inc.
240 North Washington Blvd., Suite 700
Sarasota, Florida 34236
941.366.2611



**KLINE
TOWERS**
DIVISION OF KLINE BORN AND STEEL CO., INC.



1225-35 Huger St.
PO Box 1013
Columbia, SC 29202
PHONE: (803) 251-8000
FAX: (803) 251-8099

TO: STIEVE SMITH
COSMOS BCS/C
864/609-4420

DATE: DEC. 2, 1997

FROM: Ray White, Vice President
fax: (803) 251-8099 phone: (803) 251-6202

REF: TOWER DEFLECTION KLINE CONTRACT #: _____

MESSAGE:

RECEIVED YOUR MESSAGE LATE TODAY.

TOWER DEFLECTIONS TEND TO RANGE

BETWEEN 1% TO 1.3% OF TOWER

HEIGHT BASED UPON "NORMAL"

LOADING AND CUTTING CONDITIONS.

THEFORE, A 2000' TOWER MAY

BE EXPECTED TO DEFLECT 20' TO 25'

AT ITS TOP, AND A 1000' TOWER FROM

10' TO 12', AT MAXIMUM DESIGN WIND

LOADING. OPERATIONAL WIND SPEEDS

WOULD PRODUCE MUCH LOWER

DEFLECTIONS.

SHOULD YOU HAVE QUESTIONS, PLEASE CALL.

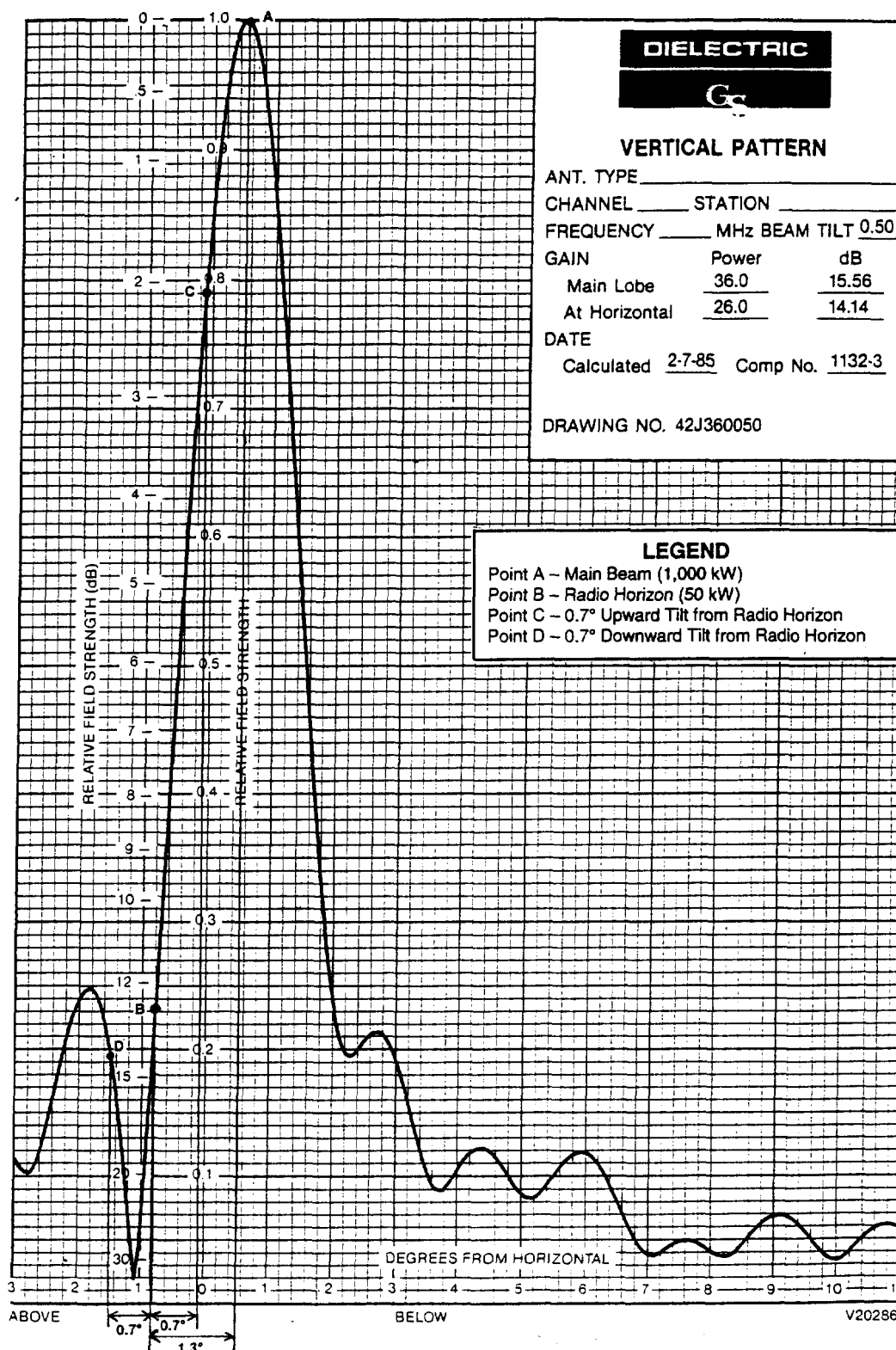
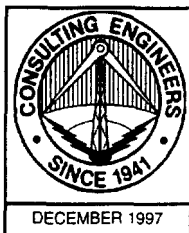
NUMBER OF PAGES INCLUDING THIS SHEET: ONE

MEMO FROM KLINE TOWERS

COSMOS BROADCASTING CORPORATION
DTV BEAM TILT PROPOSAL

du Treil, Lundin & Rackley, Inc. Sarasota, Florida

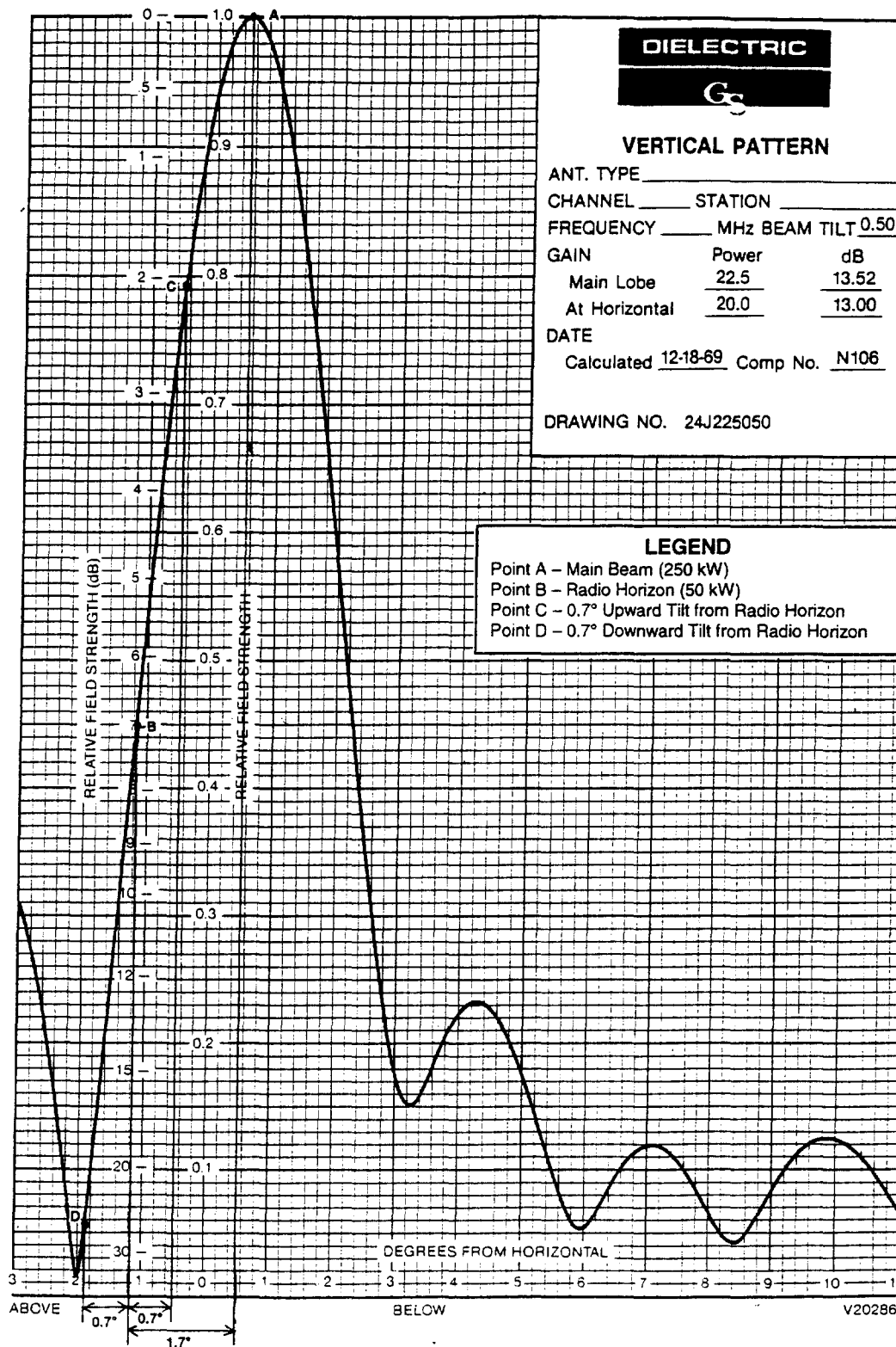
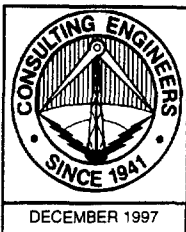
Figure 2



HIGH GAIN TRANSMITTING ANTENNA **VERTICAL PLANE PATTERN** **COSMOS BROADCASTING CORPORATION** **DTV BEAM TILT PROPOSAL**

du Treil, Lundin & Racklev, Inc. Sarasota, Florida

Figure 3



LOW GAIN TRANSMITTING ANTENNA

VERTICAL PLANE PATTERN

COSMOS BROADCASTING CORPORATION

DTV BEAM TILT PROPOSAL

du Treil, Lundin & Racklev, Inc. Sarasota, Florida

Luzerne



du Treil, Lundin & Rackley, Inc., Sarasota, Florida

Luzerne



du Treil, Lundin & Rackley, Inc., Sarasota, Florida